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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/500,391	02/08/2000	Wei-Ping Sun	CISCO-1858	2543

7590 06/07/2004

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EXAMINER	
VOLPER, THOMAS E	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/500,391	Applicant(s) SUN ET AL.	
	Examiner Thomas Volper	Art Unit 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-8,10-17,37 and 39-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8,10-17,37 and 39-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-4, 6-8, 10-17, 37 and 39-41 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6-8, 10-17, 37 and 39-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klimenko (US Pat. 5,974,547) in view of Cox et al. (US 5,349,643), K. R. Sollings, "The TFTP Protocol (Revision 2)" (hereinafter RFC 783), and Bailey et al. (US 6,185,623).

Regarding claims 1, 16, 37, 41, 43 and 46, Klimenko discloses a technique for reliable booting of an operating system to a client computer. The client computer contains a LAN adapter, also referred to as a network interface card-NIC (col. 7, lines 11-16). This NIC represents the router card of the present invention. The server (50) represents the system controller of the present invention and the network (30) represents the bus of the present invention (see Figure 2A). The client computer will issue a trivial file transfer protocol (TFTP) request to server (50) by way of the NIC. The TFTP server locates and opens this file based on

the information provided in the TFTP request, then downloads this boot file, LANHD.IMG, to the client computer. The PC acknowledges successful download by sending an acknowledgement packet to the server (col. 11, lines 12-26). Klimenko fails to expressly disclose that the information used to locate the file is a port address and file type, and that the server transmits file size to the NIC. Klimenko also fails to disclose performing this process for an inactive router card in addition to an active router card. Cox discloses a client/server system wherein the client may request a boot image from a server (col. 2, line 63 – col. 3, line 27). Cox provides no disclosure for sending a file name in the request for the boot image. RFC 783 discloses a format for TFTP packets that demonstrates a TFTP request packet containing a source port address (see I Appendix). Bailey discloses a system for booting a client computer from a server that uses the TFTP. In this system the client may include a transfer size request in the TFTP request packet, in which case the server responds to the request packet with the transfer size (col. 4, line 58 – col. 5, line 36). The purpose of requesting the transfer size is to determine the amount of memory needed to store a file (col. 11, lines 57-67). This constitutes setting up a buffer size of at least as large as the file size. Bailey also discloses a subnet group of clients wherein one client is the master client, representing the active router card of the present invention, while any other clients in the group represent an inactive router cards (col. 6, lines 25-40 and col. 7, lines 35-56). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the request packet to use only the file type, and not the whole file name and to include the port address to identify the file to be sent to the NIC of Klimenko. As Klimenko discloses in Fig. 4A, there is only one image file (250) for a particular client, thus it would have been obvious that the whole file name is unnecessary in requesting the

image file. It also would have been obvious to send the file size to the NIC. It would have been obvious to have a master client and at least one other client that were sending requests to the server of Klimenko in order to download an image file. One of ordinary skill in the art would have been motivated to use the port address to first locate the directory corresponding to the particular client NIC in the server. One of ordinary skill in the art would have been motivated to use the file type, image, and not the whole file name to determine which file in the directory to send in order to simplify the request process for the NIC. One would have been motivated to send the file size to the NIC so that the client would be able to set aside enough memory to store the image file. One of ordinary skill in the art would have been motivated to have a group of clients containing a master client in case the group of clients all needed to download the same image file in order to use a common operating system.

Regarding claims 2 and 17, Klimenko discloses using trivial file transfer protocol (TFTP) to make the request for the image file. Klimenko also discloses that a TFTP acknowledgement packet is sent to the server when the client successfully downloads the file (col. 11, lines 17-22). Klimenko fails to expressly disclose forming a data packet from the file, wherein the data packet is a fixed size and includes a system frame header and a data packet protocol header. RFC 783 discloses that TFTP uses packets of fixed length blocks (page 3). Figure 3-1: Order of Headers (page 5) shows a header structure including Local Medium and Internet headers, which collectively represent the system frame header of the present invention, and Datagram and TFTP headers, which represent the data packet protocol header of the present invention. TFTP also specifies that each data packet must be acknowledged by an acknowledgement packet before the next packet can be sent (page 3). At the time the invention was made, it would have been

obvious to a person of ordinary skill in the art to use the fixed size TFTP packet format with the appropriate headers in sending data packets formed from the requested file. One of ordinary skill in the art would have been motivated to do this because this protocol is small and easy to implement for the purpose of transferring files.

Regarding claim 3, Klimenko fails to disclose sending a last packet less than the fixed size. RFC 783 discloses that a data packet of less than 512 bytes, which is the fixed size, signals the termination of a transfer (page 3). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use this last packet smaller that 512 bytes at the end of the file transfer in the invention of Klimenko. One of ordinary skill in the art would have been motivated to do this to signal to the NIC that the transfer was complete so that the NIC could start using the downloaded file.

Regarding claim 4, Klimenko fails to disclose retransmitting a data packet to the client if the server receives a duplicate acknowledgment packet for the previous packet. RFC 783 discloses that a lost data packet causes a timeout for the intended recipient, in which case the intended recipient retransmits its last packet (page 3). Thus, if the intended recipient is the client and a timeout condition occurs, the client would then send an acknowledgement packet for the previously received data packet, i.e. a duplicate acknowledgment. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to retransmit a data packet formed from the image file of Klimenko in response to receiving a duplicate acknowledgement packet. One of ordinary skill in the art would have been motivated to do this in order to signal the server that a data packet has not been received and needs to be retransmitted.

Regarding claims 6, 40, 45 and 48, Klimenko does not expressly disclose a system frame header and a data packet protocol header consisting essentially of an operation code, a block number, a file type and a checksum. RFC 783 discloses a header structure in Figure 3-1: Order of Headers (page 5) of Local Medium and Internet headers, which represent the system frame header of the present invention, and the Datagram and TFTP headers represent the data packet protocol header of the present invention. The format for a data packet includes an opcode and a block # (see Figure 5-2, page 10). Additionally, TFTP specifies that it may be implemented on top of the Internet User Datagram Protocol (UDP or Datagram) (page 2). The User Datagram Header includes a checksum (page 15). Thus, this checksum would be included in the data packet protocol header. RFC 783 also specifies that a request (RRQ) packet includes a filename in the header. This filename represents the file type of the present invention because the file type is provided in the filename extension. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a system frame header and the data packet protocol header format of a TFTP data packet in sending data packets in the invention of Klimenko. It also would have been obvious to include the filename, normally only included in the TFTP RRQ packet, in the header of the data packet. One of ordinary skill in the art would have been motivated to use the system frame header and data packet protocol header to be compliant with the TFTP standard. One of ordinary skill in the art would have been motivated to include the filename in the TFTP data packet header so that the NIC on the client computer would be able to determine which packets belong to which file if more than one file is being downloaded.

Regarding claim 7, Klimenko fails to disclose that the acknowledgement packet consists essentially of a system frame header, and acknowledgement code, and a block number. RFC 783 discloses a format for an ACK packet that contains an opcode, which represents the acknowledgement code, and block # (see Figure 5-3, page 10). The system frame header is shown in Figure 3-1 (page 5). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use this format of an acknowledgement packet in acknowledging the received file from the server in the invention of Klimenko. One of ordinary skill in the art would have been motivated to do this so that the server would know which packets have been sent successfully and which ones need to be retransmitted.

Regarding claims 8 and 10, Klimenko discloses a media access control (MAC) address of the NIC that is 12 characters long in hexidecimal format, or 6 bytes long if represented in binary (col. 10, line 5). The server also has a MAC address (col. 11, lines 35-37). Klimenko fails to disclose a system frame header that specifies the addresses of the router card and system controller. RFC 783 discloses a system frame header composed of Local Medium and Internet headers (Figure 3-1, page 5). At the time the invention was made, it would have been obvious to send the MAC addresses of the NIC and server in the Local Medium part of a system frame header in the invention of Klimenko. One of ordinary skill in the art would have been motivated to do this so that the packet would be routed to the correction destination NIC and that the receiving NIC was sure that this packet was coming from the server.

Regarding claims 11, 12, 39, 42, 44 and 47, Klimenko discloses a media access control (MAC) address of the NIC that is 12 characters long in hexidecimal format, or 6 bytes long if represented in binary (col. 10, line 5). The server also has a MAC address (col. 11, lines 35-37).

Klimenko fails to disclose a system frame header that specifies the addresses of the router card and system controller, a request code, and a file type in the request packet. RFC 783 discloses a system frame header composed of Local Medium and Internet headers (Figure 3-1, page 5). RFC 783 also discloses a request packet format that includes an opcode, which is the request code of the present invention, and a filename, which represents the file type of the present invention (see Figure 5-1, page 8). At the time the invention was made, it would have been obvious to send the MAC addresses of the NIC and server in the Local Medium part of a system frame header in the invention of Klimenko. It also would have been obvious to include a request code and the file type in the request packet. One of ordinary skill in the art would have been motivated to do this so that the packet would be routed to the correction destination NIC and that the receiving NIC was sure that this packet was coming from the server. One would have been motivated to include the request code and file type to be compliant with the TFTP format of a request packet.

Regarding claim 13, Klimenko discloses that the process of downloading a boot file occurs after a user has powered-up client PC (10), which includes the NIC (col. 9, lines 56-66). It is inherent that if the client PC is powered-up it was at some point previously powered-off.

Regarding claims 14 and 15, Klimenko discloses that the process of downloading a boot file occurs after a user has powered-up client PC (10), which includes the NIC (col. 9, lines 56-66). It is inherent that if the client PC is powered-up it was at some point previously powered-off.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Sposato (US 6,463,530) Method and Apparatus for Remotely Booting a Client Computer from a Network by Emulating Remote Boot Chips

- Khanna et al. (US 2003/0200273) Console Redirection Among Linked Computers

- Hayes, Jr. (US 6,205,476) Client-Server System with Central Application Management Allowing an Administrator to Configure End User Applications by Executing Them in the Context of Users and Groups

5. Any inquiry concerning this communication, or earlier communications from the examiner should be directed to Thomas Volper whose telephone number is 703-305-8405 and fax number is 703-746-9467. The examiner can normally be reached between 8:30am and 6:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached at 703-308-6602. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Thomas E. Volper

May 28, 2004

STEVEN NGUYEN
PRIMARY EXAMINER